
VICTORIAN ENTOMOLOGIST

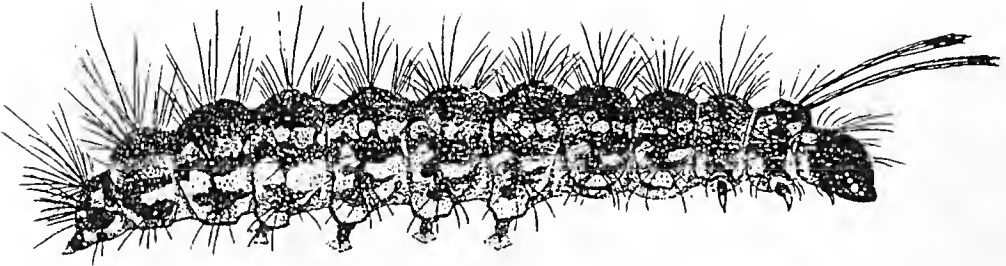
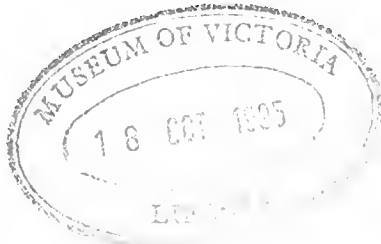


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News Bulletin of The Entomological Society of Victoria Inc.

THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc) MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

OBJECTIVES

The aims of the Society are:

- (a) to stimulate the scientific study and discussion of all aspects of entomology,
- (b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
- (c) to compile a comprehensive list of all Victorian insect species,
- (d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

MEETINGS

The Society's meetings are held at room AG13 of the Lincoln Institute, 625 Swanston Street, Carlton, Melway reference Map 2B E10 at 8 p.m. on the third Friday of even months, with the possible exception of the December meeting which may be held earlier. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions.

SUBSCRIPTIONS

Ordinary Member	\$20.00
Country Member	\$16.00 (Over 100 km from GPO Melbourne)
Student Member	\$12.00
Associate Member	\$ 5.00 (No News Bulletin)

No additional fee is payable for overseas posting by surface mail of the news bulletin. Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

Cover design by Alan Hyman.

Cover illustration of Magpie Moth or Senecio Moth larvae, *Myctemera amica* by Cait Symington.

MINUTES OF THE GENERAL MEETING, 18 AUGUST 1995

The August General Meeting was held at the Abbotsford Annex of the Museum of Victoria.

The President, P. Carwardine, opened the meeting at 8.05 pm,

Present: P. Carwardine, K. Clarke, C. Dickson, D. Dobrosak, I. Endersby, A. & E. Farnworth, R. Field, E. & P. Grey, D. & J. Holmes, P. Honan, A. Kellehear, M. Lagerwey, D. & P. Mechan, D. & N. Stewart, R. Vagi, B. Vardy.

Visitors: A. Dobrosak, M. Endersby, M. Linger, R. & V. MacPherson, P. Peile.

General Business:

- (1) R. MacPherson and R. Grund were elected to membership and nominations were received for C. Meyer and M. Linger to become members.
- (2) The date for the next excursion was set. Details are on page 100 of this issue.

The formal part of the meeting was closed at 8.10 pm.

The remainder of the evening took the form of an excursion to look at parts of the Abbotsford Annex of the Museum of Victoria. This annex houses amongst other things, the Insect collection of the Museum of Victoria. The Annex is home to many important historic collections, both from overseas and Australia. Many important holotypes are located within the Museum's collections. The tour of the museum was led by Dr. Ken Walker, Curator of Entomology, who gave an introductory talk about the museum before showing the exhibits to those present. These included several live exhibits of invertebrates collected during the recent re-run of the Horn expedition.

The President thanked Dr. Ken Walker for his tour and commentary. The evening was well attended and enjoyed by all present.

COUNCIL MEETING 15 SEPTEMBER 1995

No meeting was able to be held due to an insufficient number of Councillors being present. A minimum of five Councillors are required to form a quorum. Three Councillors were away overseas at the time.

Apologies: M. Hunting, Dr. A. Kellehear, D. Mechan.

Present: P. Carwardine, D. Dobrosak, I. Endersby.

NOTES ON MYRMECIA FORFICATA FABRICUS. (FORMICIDAE:
MYRMECIINAE: HYMENOPTERA)

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Abstract

Some nocturnal foraging and nest maintenance behaviour of the 'bull-dog' ant *Myrmecia forficata* is described, with particular reference to the ant's association with a lemon scented gum tree, *Eucalyptus citriodora*. An outline of the distribution of *M. forficata* is also included.

Introduction

At a time of the year when insect activity is at a minimum, the ants of the particular colony which is the subject of this article have been very conspicuous and active. Indeed, more so than at any other time of the year as far as I am aware. Braving cold, wind and rain workers of the "bull-dog" ant *Myrmecia forficata* forage nightly throughout the late autumn and winter months, gathering insect food, nectar and honey dew and engaging in nest maintenance and excavation. The particular colony which I have been studying first came to my attention early in May of 1993 after a relative reported having seen a 'huge brown ant' one evening in the back yard of my house at Morphett Vale. Conducting an investigation of the vicinity, I soon discovered the conspicuous entrance to the home of these impressive ants near our front footpath.

Morphett Vale is an outer southern suburb of Adelaide, located within the 'dry sclerophyll' life zone of South Australia. This zone is south of the 400mm annual isohyet and forms part of the 'Bassian zone' which includes the most humid parts of southern Australia. *M. forficata* is a Bassian species and is part of a closely related 'bull-dog' ant group. All the members of this group belong to the genus *Myrmecia* and are large species; one of the *M. forficata* workers which I captured measured 23mm in length. The group favours areas with high rainfall and is thus found throughout the Bassian zone (Andersen pg 15-16). *Myrmecia* 'bull dog' species seem to be rare in suburban locations however. Their large size and fearsome appearance has doubtless brought them little tolerance from people in densely populated areas. In over ten years of collecting and observing in suburban Adelaide, I have never before come across foraging *Myrmecia* and the subject colony is the first that I have encountered. My observations of these ants were made mainly at night from the 10th of April to the 25th of July 1995.

Observations and Conclusions

During the above period, I invariably saw the ants leaving their nest to forage just after dusk, in spite of strong wind and rain on numerous occasions. They seemed to stay out foraging for most of the night; I have seen these ants out as early as 3am and on only one occasion did I see a worker returning to the nest during daylight. *M. forficata* seem to be unperturbed by low night time temperatures. For example, on the night of June 20th when we experienced a 6°C minimum here in Adelaide, I observed seven if these ants busily depositing grains of excavated soil around the entrance to their nest with as much vigour as I had seen them display on much warmer nights during April.

Once out and about, the ants seemed to forage quite close to their nest. As far as I could tell, the numbers of foraging individuals which I counted were greater closer to the nest's entrance. For example, I counted ten individuals within an eight metre radius of the nest on the night of April 22nd, eight individuals in the same area on the night of May 15th and seven on the night of June 19th. In each instance, these counts were made at 7pm during calm, cold weather. Outside this eight metre radius I saw fewer workers foraging and this was the case on the majority of nights irrespective of weather conditions and temperature. The method used to find foragers was 'spotlighting' using a flashlight and involved checking the ground and surrounding vegetation. This was quite simple, as the area within the eight metre radius consisted of asphalt, a footpath, lawn, low shrubs, a brick wall and a lemon scented gum tree. Most of the foragers seen were on the ground, on the tree and a few were on the wall. Brown and Taylor state that the foraging behaviour of ants involves individuals learning to forage within specific feeding areas to which they constantly return (Brown, Taylor pg 956). One successful forager that I saw returning to the nest, was carrying a microlepidopteran moth from which I could detect signs of life. On another occasion I saw a worker returning with a small earwig (Dermaptera). The ant was holding this insect very delicately between its mandibles and I noticed that this hapless victim was also alive; I could see its antennae waving feebly. As stated, adult *Myrmecia* are known to feed on liquid food and what insects they do catch are destined to be eaten by their elder larvae (Anderson pg 15) (Brown, Taylor pg956). The fact that the insects caught by the foragers that I saw were alive, may indicate that the ant's larvae require live or at least very fresh food. On the third occasion that I saw an *M. forficata* forager with food, I was in for quite a surprise. This was because the food item was a large, mature, female red-back spider: *Latrodectus hasselti* (Therididae). I noticed the ant a few minutes before it entered the nest with its cargo. It seemed to be having no trouble carrying the spider which was dead and for the few minutes that I followed it, the ant kept its substantial burden well clear of the ground, indicating the strength of these ants. The ant had gripped the spider's cephalothorax, which was consequently crushed. Apart from this however, the spider's body and legs were in good condition, possibly indicating that the ant had tackled the spider while the latter was still alive and had emerged victorious against this formidable opponent.

On the night of June 19th I was observing five workers clearing the area within about a 100mm radius of the entrance to the nest. The ants were shifting plant debris, the time was 7pm and this was the first of their activities for the night. As I watched, I noticed a grey slug, about 40mm long, approaching. Other *M. forficata* workers had now emerged from the nest to deposit grains of soil on the surface and in total, about ten workers were present at any one time. Gradually the slug moved right in amongst the workers who soon became aware of it. I noticed several of them move over to investigate, even touching the slug with their antennae, but apart from this the ants ignored the slug which eventually left the area in which they were working. Obviously the mollusc did not represent a threat to the ants, nor its seems, did they consider it a suitable food item for the colony's larvae.

Of far more interest to this ant colony during the time I spent observing its activity, was a lemon scented gum tree: *Eucalyptus citriodora*, which is situated only three metres from the nest entrance. This tree is about sixteen metres tall, so it was impossible for me to determine exactly what the ants were doing amongst its branches and leaves. However, on many occasions since mid April, I had noticed nocturnal processions of *M. forficata* walking up the smooth trunk; the ants usually setting out soon after dusk. The ants would have encountered other insects on their journey up the tree, including small weevils (Curculionidae) and various species of ant but I suspect that it was the tree's nectar which was their chief concern. During late April and throughout May the numbers of *M. forficata* that I counted on the tree trunk at various times, gradually increased, from about four or five on average, to seven or eight. Then, at 6pm on the 24th of June; a windy evening, I counted fifteen ants climbing the trunk, all relatively close together and all advancing slowly with what seemed deliberate caution, lest they be blown off by a strong gust I suspect. These individuals were joined by another four who also climbed up the smooth bark in a similar manner.

Eucalyptus citriodora flowers during June and July, producing dense sprays of small white flowers on the tips of its branches. The blooms are at their most abundant in mid-winter, so this would seem to coincide nicely with the peak in activity of *M. forficata* that I noticed.

However, the tree did not actually flower until late June, which may mean that it forms part of the ants' regular foraging area and so is frequented by them regardless of whether it is in flower. Nectar gathering at night means that the ants would not encounter competition from diurnal nectar feeders such as birds and honey-bees and would also afford the ants a certain amount of protection from predators.

On six separate occasions, all at around midnight, I observed stationary *M. forficata* positioned along the height of the tree trunk. These individuals were usually between 20 and 80 cm apart, all facing upwards and all were positioned on the same side of the trunk; the side nearest to the position of the nest. Apart from gently waving their antennae, the ants were quite inactive. I counted five individuals engaged in this behaviour on the first three occasions and four on the other three. On the last occasion, I returned to the tree an hour after I first noticed the 'resting' individuals and found their situation unchanged. All the *M. forficata* engaged in this behaviour were large 'major' workers and I am tempted to suggest that they were acting as guards along a chemical trail. It is known that such trails are laid down by foragers returning to the nest from a food source and consist of secreted pheromones (Brown, Taylor pg 956). However, I did not see other workers either going up or down the trunk past these 'guards' and therefore cannot account for this behaviour.

References

1. Andersen, A. N. (1991) *The Ants of Southern Australia: A guide to the Bassian Fauna*. C.S.I.R.O. East Melbourne.
2. Brown, W.L. and Taylor, R.W. (1970) Hymenoptera: Superfamily Formicoidea *The Insects of Australia*. C.S.I.R.O. Melbourne.
3. Greenslade, P.J.M. (1979) *A guide to the Ants of South Australia*. South Australian Museum. Adelaide.

BIOLOGICAL NOTES ON SOME EASTERN AUSTRALIAN BUTTERFLIES

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Summary: New larval hosts are given for *Telicota colon argeus* (Plötz), *Eleppone anactus* (W.S. Macleay), *Papilio aegeus aegeus* Donovan, *Jalmenus evagoras evagoras* (Donovan), *Ilypochryps digglesii* (Hewitson) and *Ogyris genoveva genoveva* Hewitson. An overlooked larval host for *Tisiphone abeona morrissi* Waterhouse is confirmed, and an oviposition record for *Junonia hedonia zelima* (Fabricius) is discussed. Several adult nectar sources are recorded for *Catopsilia pomona pomona* (Fabricius), and evidence of the white form of *Cepora perimale scyllara* (W.S.Macleay) in northern Queensland is presented. In addition, *Signeta tymbophora* (Meyrick & Lower) is reconfirmed on the Lamington Plateau, its temporal appearance clarified, and a new adult nectar source provided. A new southern limit for *Elodina queenlandica kuranda* DeBaar & Hancock is provided and evidence of an overlapping distribution in central Queensland with *E. angulipennis* (P.H. Lucas) is suggested. Habitat preferences of these *Elodina* C. & R. Felder species are given. A record of *Ogyris oroetes oroetes* Hewitson with *Camponotus intrepidus* ants is detailed along with biological notes on *Camponotus* ant interactions. Another record of *Papilio demoleus sthenelus* W.S. Macleay ovipositing on *Citrus* is given, and confirmation of several species of *Papilio* Linnaeus juveniles on various *Citrus* spp. is given in passing.

HESPERIIDAE

Signeta tymbophora

On 22 February 1995, at 2 km NE of Kamarun Lookout at just over 660m a.s.l. on the Lamington Plateau (outside the National Park boundary), a number of males were encountered feeding at flowers of *Parsonsia straminea* (Apocynaceae) from 10:30 up until 11:30 am (EST). Weather conditions were fine. After feeding, males perched with wings half open in a V-shape, about 2-3m above the ground, on and near this flowering vine. The vine was growing in an upland rainforest clearing which received morning sun. Six adults were examined and these ranged from near fresh to worn condition. General searching in the area revealed some 23 other butterfly species, but *S. tymbophora* was entirely localised about this flowering vine. No females were encountered. The vine also attracted a male *Toxidia rietmanni*, but many other butterflies were feeding at *Lantana camara* (Verbenaceae) growing nearby.

Common & Waterhouse (1981) report *S. tymbophora* flies in February and March at Lamington, where it is uncommon. The unacknowledged temporal data in Common & Waterhouse was probably derived from Peters (1965) and/or a number of museum specimens labelled 'National Park' and variably dated between 25 February and 10 March of 1929 taken by W.B. Barnard. Later, on 13 January 1955 the species was encountered by J.M. Landy, and again on 22 Jan 1973 by Tony Morton (Dunn & Dunn database). These specimens are imprecisely labelled Lamington Plateau and Lamington respectively. It would seem the butterfly is active between mid January and early March on the Lamington Plateau. I made a second visit to the site on March 23rd with Peter Fox. We searched the area where the *Parsonsia* was growing for one and a half hours (up until 11 am, EST) but none was seen. The vine was still blossoming, attracting feeding adults of *Tirumala hamata*, *Deudorix diovis* and *Nacaduba kurava*, but many flowers had finished. Weather conditions were again ideal, and 25 additional species were active nearby. Published adult nectar sources include *Leichardtia* (Aselepiadaceae) and *Lantana* (Daniels 1976); *Parsonsia* provides an additional record.

Teicota colon argens

On 21 February 1995 in the Mount Coot-tha Botanical Gardens near Brisbane Qld., a female *T. colon* was encountered ovipositing on the undersurface of leaves near the top of a metre high *Miscanthus sinensis* var. *strictus*. (Eulalia grass) (Poaceae). The Eulalia grass was grown as an isolated clump amongst tanbark. A male *T. colon* was perched a couple of metres away, and as no flowering plants were close by, the perch site seemed clearly associated with this emergence/oviposition site. The female laid at least two eggs. Each egg was deposited singly, and she flew to a new position for each, landing beneath the leaf with wings closed. No crawling was involved before or after oviposition. A search of the plant revealed several more eggs and a number of empty larval shelters. Earlier, in November 1993, several shelters had contained half grown larvae. One larva at maturity was found to have been parasitised by braconid wasps

In south-eastern Queensland, *T. colon* usually inhabits eucalypt woodlands and open forests, but is occasionally encountered in small localised populations in residential areas near Brisbane and Beenleigh where food plants remain. This very attractive chinese grass is sporadically grown as an ornamental in residential areas about Brisbane, and is a new larval food plant for *T. colon*.

PAPILIONIDAE

Eleppone anactus

Several mature larvae were found on *Citrus paradisi* (Ruby grapefruit) (Rutaceae) in the Mount Coot-tha Botanical Gardens in April 1995. This is a new larval host record.

Papilio aegus

In June 1995, in the Mount Coot-tha Botanical Gardens, I found eight eclosed pupae on *Panicum trifoliatum* (Rutaceae). As larvae pupate on the host it is reasonable to assume that this was the larval food source - providing a new host record. This chinese bush was earlier recorded as a foodplant of *E. anactus* (Sankowsky 1991). An earlier search of several *Citrus* species growing elsewhere in the gardens in April revealed mature larvae on *C. sinensis* (orange), both larvae and pupae on *C. reticulata* (imperial mandarin) and mature larvae on *C. paradisi* (ruby grapefruit). All three are known hosts of *P. aegus* (Straatman 1962), but my records, being botanical specimens, serve as reliable confirmation for each. One of the pupae taken was parasitised by tiny wasps.

Papilia demaleus sthenelus

On 14 October 1991 at Wulguru, near Townsville Qld, a female was observed ovipositing on a small *Citrus limon* (bush lemon) in a residential garden. Two eggs were laid. Common & Waterhouse (1981) briefly note similar instances and report variable mortality on *Citrus* spp. About three weeks later I re-examined the bush lemon for larvae but none was found. In May 1995 I again examined the same plant for further evidence of juveniles of *P. demaleus* but encountered only two parasitised pupae of *P. fuscus capaneus* (a known host - Straatman 1962).

PIERIDAE

Catopsilia pomona

Adults have been seen feeding at flowers of several garden plants at Mount Coot-tha. The unidentified thistle record was at Maryborough. The nectar sources from seven families include:

Buddleia davidii (Buddlejaceae)

flower color: lilac; month: Jan; time not recorded; 1 ♀

Stemmadenia galeottiana (Apocynaceae) (from Cuba)

flower color: red; month: Feb, time: 3:00pm EST; 2 ♀♀

Bougainvillea sandariana (Nyctaginaceae)

flower color: purple; month: Apr, time: 12:00pm EST; 2 ♂♂

Pentas lanceolata (Rubiaceae)

flower color: red; month: Apr, time: 1:00pm EST; 1 ♀

Lantana montevidensis (Verbenaceae)

flower color: lilac; month: May, time: 1:15pm EST; 1 ♀

Caesalpinia pulcherrima (Caesalpinaceae)

flower color: red; Month: May, time: not recorded; 2 ♀♀

Onopordum or *Cirsium* sp. (Thistle) (Asteraceae):

flower color: lilac; month: Sept. time: between 12-3pm; 1 ♂

Elodina queenlandica kuranda & *E. angulipennis*

DeBaar & Hancock (1993a) gave the northern limit of *E. angulipennis* as Carnarvon Range and Bulburin and from Maryborough Qld south to Sydney NSW, and soon after (1993b) stated, "We are unable to explain the northern distributional constraints", which they attributed in part to lack of material from between Rockhampton and Bundaberg. The allopatric sibling species, *E. queenlandica*, they said (1993a), occurs north from Eurimbula Qld.

DeBaar & Hancock (1993a) also examined material from River Heads NE of Maryborough and considered these closer to *angulipennis*. I beg to differ here. It was during my period in Maryborough-Hervey Bay (1988) that I first noticed the remarkable difference between two discrete populations of what was then *E. angulipennis* (*s.l.*). These populations it seemed were separated by habitat and/or temporal appearance. The two forms did not fly together at any locality. I encountered *E. angulipennis* (*s.s.*) in woodland at Teddington Weir during October, and also at Saltwater Creek, on the Hervey Bay Rd, where they were sporadic in mangrove-woodland/pasture ecotone in August and September. These adults differed markedly from a series of three males and two females from littoral rainforest at River Heads. Here, in April 1988, adults had just emerged and were locally abundant.

In general appearance the River Heads population is very close to *E. queenlandica*, and I believe it is the southern limit of the species in Queensland. Rod Eastwood recently showed me many more specimens from River Heads all of which agreed with mine, and a number of specimens from other localities in and about Maryborough all of which were typical *angulipennis*. Like me, he did not find the two species sympatric at River Heads. Three winter specimens of his from Yeppoon also agreed with *angulipennis*.

Taken together, the extension of *queenlandica* to River Heads and that of *angulipennis* further north to Yeppoon infers sympatry, but is better described as parapatry since, in this region,

queenslandica appears confined to closed forests and *angulipennis* to woodland areas close to riparian scrubs.

As a whole the two taxa are not habitat segregated, though. In northern NSW *E. angulipennis* can be locally abundant in littoral, lowland and upland rainforests, and in southern Queensland at Lamington National Park and in the Bunya Mountains it is similarly common in upland rainforest. In northern Queensland, I have usually found *E. queenslandica* in smaller numbers, flying in littoral, lowland riparian, and upland rainforests. However, at Hazelwood Gorge west of Eungella National Park in September 1993 several adults were flying in dry woodland along an escarpment.

The presence of *angulipennis*-like adults in central Queensland during winter could be interpreted as seasonal variation within a single species. Where climates seem suitable, such as in this region, both forms could be expected. DeBaar & Hancock (1993a) examined only five specimens from central Queensland - these they assigned to *E. queenslandica*. Perhaps coincidentally, all were obtained in the hot months between Nov and April. Only three winter specimens of *E. queenslandica kuranda* were examined by these workers and all were from the Cairns district in the far north. The seasonal variation described by DeBaar & Hancock (1993a) as "slight" could prove to be more extensive when more specimens from the cooler months in central Queensland become available. For the present, the two species now seem parapatric between Rockhampton and Maryborough.

Cepora perimale scyllara

The ground color of the hindwing beneath in *C. perimale* is believed to be seasonally controlled (see Dunn & Dunn 1991 p.53 for brief discussion). In late 1991 I examined an interesting specimen from Coen Qld, taken in October 1986 by Terry Woodger, which corresponds to the white form otherwise known only from north-western Australia (Common & Waterhouse 1981). This represents the first record of this color variant from Queensland. The white form obviously has a broader occurrence across the north of the continent than previously believed but appears remarkably rare on Cape York Peninsula. However, it is possible the Coen specimen was a vagrant from the Northern Territory explaining the absence of records of similar specimens from Queensland over the past century.

NYMPHALIDAE

Junonia hedonia zeltma

On 9 September 1994, Ray Manksie and I investigated a recently declared habitat reserve at the end of Victory Street in Maryborough Qld in the hope of determining the local larval host of *J. hedonia*. I had mentioned to Ray that of the few host records, all had been made in tropical latitudes except Sankowsky's (1975a,b) record of *Hygraphila salicifolia* (Acanthaceae) at Bundaberg. The larval host at Bundaberg was growing amongst paperbark (*Melaleuca*) trees in coastal swamp (Sankowsky 1975b), habitat typical of the butterfly's usual haunts. It is reasonable to speculate that the same host is utilised at Maryborough.

At Maryborough this nymphaline is similarly localised to *Melaleuca* swampland, a part of which is reserved and has newly constructed board walks. Maryborough is towards the southern limit of the butterfly's range where it is rare. Unfortunately, most of the butterfly population is on private holdings just beyond the reserved area. Several males were active and, at 11:40 am (EST), a female was observed flying near the bases of small herbs and reedy plants. As we watched she landed and oviposited on debris caught just above the base of the root of *Ludwigia octovalvis* (Onagraceae) (willow primrose). Being the end of the dry season, the

swamp water had receded to only about 2-3 cm deep at this point and hence the plant's root was mostly exposed. There were no other plants in contact with the debris and it seems the larvae were intended to feed on the *Ludwigia*. This is not a known host nor a known host family, having no evolutionary relationship with the Acanthaceae. Perhaps this is an example of an ovipositional 'mistake' (Kitching & Zalucki 1983) or maybe the herbarium identification is in error? In the life history paper, Sankowsky (1975b) does not specify whether eggs are laid on or near the host, but in an earlier paper (1975a) oviposition on the host is stated in the second paragraph. Common & Waterhouse (1981) did not include this information.

Tisiphone abeona morrissi

In July 1993 many third and fourth instar larvae of this satyrine were found on *Gahnia clarkei* (Cyperaceae) at Brunswick Heads NSW in mangrove ecotone and nearby in *Banksia* heathland. These same plants also supported larvae of *Hesperilla picta* and *H. ornata*, both of which have been recorded previously on this sedge (Smales & Ledward 1943 and Muller 1992, respectively). Of the skipper larvae, one, seemingly *H. picta* (based on examination of larval head), had been parasitised by an orange Ichneumonid wasp.

More juveniles, of all three species, were obtained from younger *G. clarkei* plants situated in slightly more open mangrove ecotone than from the massive plants growing amongst very dense heath (but *c.f.* Smales & Ledward 1943). Earlier in March of the same year several *T. abeona* adults were active, and two empty pupal shells, suspended by the cremaster, were present on the leaves of the host. In July the pupal exuviae were still present suggesting they weather the elements for some period after the butterfly's emergence before decomposing.

Over 50 years ago Smales & Ledward (1943) commented that *T. a. morrissi* "prefers this species..." but this specific data has been overlooked by later authors, although both Conroy (1971) and Common & Waterhouse (1981) list *G. clarkei* as a food plant of the species as a whole. My recent observations confirm its use by subspecies *morrissi* in coastal NSW. The apparent greater abundance of *G. clarkei* over *G. sieberiana* in coastal areas at this latitude may have an influence on any alleged preference by this subspecies.

LYCAENIDAE

Hypochrysops digglesii

In September 1993, at Saunders Beach near Townsville Qld, Terry Woodger and I found lycaenid larval feeding damage on leaves of a *Dendrophthoe* sp. (Loranthaceae). On an earlier visit Terry found sheltered juveniles of *H. digglesii* under adjacent loose bark. The present damage was consistent with that produced by larvae of *H. digglesii* confirming their continued presence in the area, but none was found on this occasion. At the time we both thought that the mistletoe was probably just *D. vitellina* - a known host (Common & Waterhouse 1981). However, subsequent herbarium identification confirmed a new food plant for this butterfly, namely, *D. glabrescens*.

Jalmenus evagoras evagoras

In April 1993, in company with Peter Fox, I visited the site where he had earlier reported a colony of *J. evagoras* breeding along the Burrum Heads road (see Fox 1992). This colony is situated in heathy woodland adjacent Rocky Creek (25°19'S, 152°36'E), about 16 km south of the Burrum Heads township. No larvae, pupae or adults were present on this occasion, the species was probably in diapause at the egg stage, a known behaviour at this time of year (Kitching & Taylor 1981). A sprig of the wattle was taken and later determined as *Acacia*

leiocalyx (Munrosaccac). This represents a new, but not entirely unexpected, host record for this hairstreak.

The host at Rocky Creek seemed more or less similar to the wattles Ray Manski and I found *J. evagoras*, *J. daemeli*, *J. ictinus* and *Hypochrypsops delicia* breeding on at Maryborough over the years (see also Dunn 1982). In 1981 sprigs of these wattles (from two different sites) were shown to the late Joe Manski who recognised them as *A. cunninghamii* - the same plant he had reared all four lycaenids from years earlier (Manski 1960). *A. cunninghamii* is a species group which presently involves six taxa. Hawkeswood (1985) suggests *A. leiocalyx* as the likely species intended by Manski (1960). Although the Rocky Creek site is more heathy in composition than the woodland habitat about Maryborough it now seems certain that *A. leiocalyx* is the host of the four lycaenid species in Maryborough.

Ogyris genoveva genoveva

In November 1993 several larval cohorts were found feeding on three loranthaceous mistletoes near Eatonsville, about 15 km W of Grafton NSW. These mistletoes comprised *Amyema miquelii*, *Dendrophthoe vitellina* and *Amyema conspicuum*; the latter is a new larval host record.

The larvae associated with *Amyema miquelii* clumps growing on eucalypts were tended by *Camponotus intrepidus*, *C. consobrinus* (sp. group) and *C. nigriceps*, depending on which ant species had taken 'possession' of the particular tree in each case. Several years ago, Rod Eastwood discovered *O. genoveva* larvae attended by *C. intrepidus* in northern NSW (Dunn *et al.* 1994), and the other two attendant ant species are now well known (Fisher 1978, Samson & O'Brien 1981, Common & Waterhouse 1981). The larvae found feeding on *D. vitellina* growing on a *Eucalyptus* sp. were also tended by *C. intrepidus*. The new food plant, *A. conspicuum*, was parasitising *Alphitonia excelsa*, and I uncovered several mature larvae sheltered in *C. intrepidus* ant galleries in the soil at the base of the ash tree.

Within the confines of Barlow's McPherson region (see Dunn & Dunn 1991), I have examined a number of colonies of *O. genoveva* on the Darling Downs in Queensland and in lowland areas of north-eastern New South Wales. Throughout the region the species occurs in eucalypt woodland, and the regular larval host is *A. miquelii*. At the four sites on the Darling Downs the attendant ant was *C. consobrinus* (sp. group).

Ogyris oroetes oroetes

As a general rule, larvae of *O. oroetes* are not attended or associated with ants. In February 1994, at about 6 km NE of Leyburn Qld, I found six mature *Ogyris* larvae under flaky *Eucalyptus* bark close to the attachment site of a low clump of *Amyema miquelii*. The six larvae were sheltered within about 20 cm of the mistletoe root clump, a few were in a group and others appeared solitary. Small black unidentified ants were prolific under the bark with trails leading to the ground. They were clearly associated with at least some of these larvae but perhaps not all. Thinking only two species were involved I was surprised when this larval batch soon after produced a pair of *O. oroetes*, *O. olane* and *O. amaryllis*. All six larvae were greyish brown. The *oroetes* larvae were conspicuous being without the dorsal markings and these received only limited attention from the ants. The small black ants were probably mainly attracted to *O. amaryllis* but may have shepherded their companions due to their very close proximity.

Near Eatonsville NSW, at the base of a very large eucalypt bearing the mistletoe *A. miquelii*, a single yellowish green colored mature larva of *Ogyris oroetes* was found sheltered amongst a

cohort of *genoveva* larvae in an ant gallery in soil. This subterranean shelter site was about five or six metres ('as the larva walks' rather than 'as the crow flies') from the mistletoe host and required a lengthy nightly journey to feed -albeit that (*genoveva*) larvae can crawl rather speedily! I have found *O. oroetes* larvae usually shelter much closer to the host than this. *C. intrepidus* ants were attending the *genoveva* larvae and many were also crawling over the *oroetes* larva. Whether they were actually 'tending' the *oroetes* larva was not clear; larvae of this species are not recorded as ant-tended (Common & Waterhouse 1981). The *Camponotus* ants may have mistakenly guided the *oroetes* larva back to the eucalypt base along with the *genoveva*.

I transferred several *genoveva* larvae and the *oroetes* larva (all of which had, only seconds before, been in the presence of *C. intrepidus* workers and soldiers) into a small plastic container with ants of *Camponotus nigriceps* already tending *genoveva* larvae taken from a tree a couple of kilometres away. Having the odour of a different ant species I was unsure whether the *C. nigriceps* ants would attack one or both lycaenid larvae or accept and tend one or both species. Non-aggressive attention to both lycaenid larvae was given by the *C. nigriceps* workers. A worker immediately crouched over the *oroetes* larva, curled its abdomen down, and appeared to spray the larva with a mist-like substance before leaving it to then examine a *genoveva* larva. This may have assisted as a 'new ownership' behaviour suggesting the ants recognised both larvae as resources to be tended, irrespective of previous attendance by the slightly more aggressive species, *C. intrepidus*.

Incidentally, I revisited this colony in winter this year and found the local *genoveva* cohort had vanished. Neat and complete limb removal, presumably because of the mistletoe's presence, had occurred at some stage in the not too distant past. There was no longer any ant presence at the base of the eucalypt. It is most likely that mistletoe removal, carried out by the Shire Council along road reserves was responsible, as they say, "they kill the trees". But, it was at this same site nearly two years ago that Rod Eastwood and I assisted the BBC Natural History Unit film *genoveva* larvae and pupae for their forthcoming television series 'Alien Empire'. Perhaps the attention gave some locals reason to fear the potential encroachment of 'endangered' or politically sensitive butterfly species onto their land?

Acknowledgements

I thank Dr Michael Braby (then of Townsville), Rod Eastwood (of Brisbane), Peter Fox (of Beenleigh) and Terry Woodger (of Townsville) for their field assistance and permission to study their specimens. Thanks also to Ms Catherine Hohnen (Queensland Herbarium, QDEH) and Dr Brian Barlow (National Herbarium, CSIRO) for their botanical identifications.

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REPORT ON THE SOCIETY'S EXCURSION TO JELLS PARK

by Daniel Dobrosak
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An excursion to Jells Park was held on Saturday 24 September 1994. Jells Park is a recreational and conservation park managed by Melbourne Parks & Waterways and is located approximately 22 km south-east of Melbourne. The park was opened in April 1976 and was named after Joseph Jell, an early settler who grazed cattle on the area from 1849 to 1886.

Jells Park offers a combination of wetlands, maintained lawned areas for general recreation together with segregated 'conservation' areas consisting of remnant native flora and fauna. The park is linked with extensive walking and cycling tracks

The following people attended the excursion:

P. Carwardine	K. and E. Clark	D. and A. Dobrosak
E. and P. Grey	C. Meehan	

The day was mild and overcast, with a few sunny periods and occasional bursts of light rain throughout the day.

P. Carwardine led the excursion, commencing with the cultivated native garden near the visitors area. This garden included several *Gahnia radula* and *Lomandra longifolia* plants. P. Carwardine announced to those present that skipper larvae and pupae can be found by carefully searching through the fronds of *Gahnia* and *Lomandra* plants, but to date, he had never found any on *Lomandra*. A casual glance through the nearest *Lomandra* by P. Carwardine resulted in an exclamation of surprise when a larvae was found within seconds! Chris Meehan pointed out that it was most likely to be *Hesperilla donnysa*.

The excursion continued under Peter's leadership through the park. Initial interest was found in the many different types of Galls found on the trees in the park. Peter's knowledge in botany was enjoyed by all present as Peter elaborated upon the different types of galls and different galling agents; some being fungal and others insects. Regardless of the initiator of the gall they eventually prove a source of food and shelter for several species of insect.

The many flowering wattle species in the park harboured a large number of insects. Many different types of beetles (unidentified) were found amongst the foliage and flowers. Some insects, including a particularly strikingly coloured beetle, escaped containment before identification could be made!

Gahnia radula was found in several dozen clumps throughout the park, many of these contained larvae and a few pupa. A few pupa were taken by members for the purpose of identifying the skippers breeding on the *Gahnia*. Unfortunately, none survived to maturity to enable an identification to be made.

The following is a list of insects identified. There is little doubt that more favourable weather and further investigations through the warmer months would extend this list.

- *Delias Harpalysce* (Imperial White butterfly)
- *Pieris Rapae* (Cabbage White butterfly)
- *Chlorocoma dichloraria* (Twin Emerald moth)
- *Uraba lugens* larvae (Gum Leaf Skeletoniser)
- *Opodiphthera* sp. cocoon (Emperor Gum Moth)
- *Perga dorsalis?* larvae (Steel Blue Sawfly)
- *Paropsis atomaria* (Oliver) (Paropsis beetle)
- *Chrysomelidae* Sp.
- Stick Insect (Order: Pasmatoidea)

Thanks are extended to Peter Kelly for identifying the beetles and Melbourne Parks & Waterways for allowing the Society the opportunity to examine and collect the insects within the park.

RANGE EXTENSIONS AND NATURAL HISTORY NOTES FOR SOME WESTERN AUSTRALIAN BUTTERFLIES

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Abstract: Range extensions, new foodplants and life history data are recorded for the butterflies *Ogyris idmo idmo* Hewitson, *O. oianes* C. & R. Felder, *Candalides hyacinthinus simplex* (Tepper), *C. cyprotus cyprotus* (Olliff), *Geitoneura klugii klugii* Guérin Méneville, *Hypochrysops ignitus* (Leach), *Theclinesthes miskini miskini* (T. P. Lucas) and *Neolucia agricola* (Westwood), in Western Australian.

Introduction

Over the past few years we have recorded range extensions and general life history data for a number of butterflies in Western Australia. This information is listed below.

Range Extensions

Ogyris idmo idmo

The large brown azure *O. i. idmo* was recorded by Common and Waterhouse (1981) as occurring as far north as Perth, although a single specimen was collected by I. F. B. Common from 10 miles W of Watheroo on 4 November 1958 (Dunn and Dunn 1991, E. D. Edwards pers. comm.). Dunn and Dunn (1991) erroneously recorded *O. i. idmo* as occurring at Leeman; however, no specimens of *O. i. idmo* are known from Leeman.

In September 1993 we located a new population of *O. i. idmo* 1 km S of Port Denison (29° 17' S 114° 55' E), some 300km N of Perth, considerably extending the northern limit of the range of *O. i. idmo*. A number of specimens were collected or observed at this site on September 28 1993, October 11 1993, and October 12 1994. We had previously visited this site on September 24 1992, without observing any specimens of *O. i. idmo*, suggesting that the flight period had not commenced in that year. Near Perth, adults typically appear in the first week of November, but as early as the last week of October. At Port Denison, specimens of *O. i. idmo* fly in company with *O. oianes* (see below), and this is currently the only site in Western Australia where this is known to occur.

Morphologically, typical specimens of *O. i. idmo* from Port Denison are indistinguishable from those from Perth. However, one female we collected is more brightly and extensively purple above than Perth specimens, and in this respect appears somewhat intermediate between Perth and Cape Arid (Field 1990) specimens of *O. i. idmo* (colour illustrations of specimens from both of these latter localities may be found in Houston 1994).

Ogyris otanes

The western dark azure, the distinctive Western Australian form of *O. otanes* (Williams et al. 1992), has been recorded as far north as Leeman (Field 1990). In September 1992 we located a new population of *O. otanes* 1 km S of Port Denison (29° 17' S 114° 55' E), extending the range of *O. otanes* some 70km further north. This discovery increases the number of known populations of the distinctive northern form of *O. otanes* to two. A number of specimens were collected or observed at this site on September 24 1992, September 28 1993 and October 12 1994. A short series of specimens were also bred from larvae collected on October 11 1993, taken at night from the foodplant *Leptomeria preissiana* (Miq.) A. DC.; these emerged as adults between 12 and 26 November 1993.

Morphologically, specimens of *O. otanes* from Port Denison are very similar to those from Leeman, but are generally smaller and in females the size of the white patch on the forewing is typically reduced in size.

Candalides hyacinthinus simplex

This butterfly is undoubtedly widespread in southern Western Australia, although Dunn and Dunn (1991) record relatively few localities from the inland of the state. On October 11 1994, a single specimen was collected from the south eastern corner of Watheroo National Park (30° 10' S 115° 59' E).

Candalides cyprotus cyprotus

Like *C. h. simplex*, *C. c. cyprotus* is widespread in southern Western Australia, although Dunn and Dunn (1991) record relatively few localities from the inland. On October 13 1994, a single specimen was collected from Alexander Morrison National Park (30° 04' S 115° 32' E). A number of specimens have also been collected hill-topping near Lake Douglas, south west of Kalgoorlie.

Geitoneura klugii klugii

Dunn and Dunn (1991) give the distribution of *G. k. klugii* as predominantly coastal southern Western Australia, and record few inland localities. We have specimens from Ongerup (33° 57' S 118° 30' E, November 9 1993, 2 specimens), from 17.6km NW of Southern Cross (31° 07' S 119° 13' E, 5 October 1994, 2 specimens), and from Mount Madden (33° 15' S 119° 50' E, 9 November 1994, 2 specimens).

Natural History Notes

Hypochrysops ignitus

H. ignitus was recorded from Watheroo National Park by Williams et al. (1993). Specimens from this locality are morphologically similar to specimens of *H. i. ignitus* from South Australia (R.H. Fisher, pers. comm.; see illustrations in Fisher 1978).

At Watheroo National Park we have located the early stages in ant nests at the base of *Acacia saligna* (Labill.) H. L. Wendl. In October 1993 approximately 50 ova were collected, and five of these (all males) were successfully reared to adults on this foodplant. Larvae developed rapidly during summer 1993/4, and most had reached full size by February 1994. Larvae continued to feed occasionally during winter, but were mostly inactive. Larvae became active again and recommenced regular feeding in September, pupating in late September 1994. Adults

emerged between 17 and 22 October 1994. Larvae preferred to feed on the older phyllodes or bark of the foodplant, in contrast to larvae of *T. m. miskini* reared on the same plant (see below). These observations confirm that the Watheroo population is single brooded, and that the relationship with the host ant is not obligatory.

Specimens of *H. ignitus* reared from mature larvae collected from Cape Arid National Park in October 1994 are similar to specimens from Watheroo National Park. This suggests that observed morphological differences between *H. i. ignitus* and *H. i. oliffi*, particularly the colour and brightness of the female upperside, may be due to differences in climatic conditions during development, rather than true taxonomic differences. This hypothesis was suggested to us by E. D. Edwards (pers. comm.). Clearly, careful consideration needs to be given to the taxonomic status of Western Australian populations of *H. ignitus*.

Theclines thes miskini miskini

On two separate occasions, individual larvae of *T. m. miskini* were inadvertently collected from *Acacia saligna* plants growing in the Perth suburb of Kensington, when obtaining fresh foodplant for the *H. ignitus* larvae described above. Larvae fed during the day on the fresh new phyllodes, and were not attended by ants.

Neolucia agricola

In April 1993 two of us (AJG and HHB) discovered a population of *N. agricola* at Julimar (31° 30' S 116° 14' E), approximately 60km NNW of Perth. Until this population was discovered adults of *N. agricola* were thought to fly only in spring or summer (Common and Waterhouse 1981). This butterfly has only been recorded as being single brooded, and subsequent observations by one of us (HHB) have confirmed that at this site adults fly only in autumn. Thus interbreeding between the spring and autumn populations is unlikely. Comparison of autumn specimens with spring specimens from Perth failed to locate any differences in the genitalia (E. D. Edwards pers. comm.). This suggests that the two populations, although temporally isolated, are conspecific. The taxonomic status of this population is currently being investigated. Larvae feed on the flower buds of the autumn-flowering legume *Davesia angulata* Benth., a new foodplant record for this butterfly.

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THE FASCINATION OF INSECTS.

William (Bill) Elder
133 Victoria St, Kerang VIC 3579

Being a new member of the Entomological Society of Victoria I wanted to pass on my impressions of the importance of insect study and the role it has played in my life.

My fascination of insects began when I was a mature-age student at Longerenong Agricultural College near Horsham. I was given the opportunity to put together an insect collection as part of an elective in Natural Resource Management. The lecturer was knowledgeable in things entomological and encouraged me along. We had to collect a range of insects that had some agricultural significance, at least 30 specimens, all correctly identified to Family, and mounted and labelled properly.

I soon found that my house and garden abounded with insects and it was not hard to collect 30 specimens. A couple of hours spent in a crop or pasture yielded a plethora of insects of all descriptions. I went berserk! Everywhere I went I was on the lookout for interesting insects and spent a lot of good study time poring over my catches trying to identify them. You could say that I'd "caught the bug" (and the beetle, the moth, the ant and the lacewing!). My growing knowledge of insect pests in crops and stored grain were helpful for other subjects.

I took the opportunity to visit the CSIRO Division of Entomology in Canberra and I was treated to a tour of the Australian National Insect Collection. This is the most amazing collection of beautiful and intriguing insects I have ever seen! I was so impressed and amazed that I bought a copy of "Insects of Australia" - this was getting serious. Needless to say I got a good mark for my collection and have continued to add to it over the last three years.

My interest in insects led to my being asked to help Dr. Paul Horne from the Institute for Horticultural Development (Agriculture Victoria) in Melbourne who was conducting field work at Longerenong. Paul had set up a long-term study of invertebrate populations in agricultural environments. The study included a weekly collection from pitfall traps in three paddocks that were under three different management regimes. These included traditional cultivation, chemical fallow and conservation (minimum tillage) farming. Paul suggested that conservation tillage practices could result in increases of insects currently viewed as beneficial, thus resulting in them becoming pests.

I spent 12 months collecting from the small plastic containers and gained a greater appreciation for soil-dwelling insects, especially Coleoptera, Paul's specialty. I was enthused to write an article for the local newspaper in Horsham which was duly published. It not only publicised the work being done but also showed my growing fascination in the insect world.

During 1994, having completed my course in Agricultural Services, I joined the ranks of the unemployed. I was not idle, however, and I took every opportunity to do something different and exciting. I volunteered to be a Little Tern warden in far East Gippsland to help the DCNR manage this endangered migratory bird. I spent two long, lonely weeks on a remote beach completely cut off from civilisation - but the insect fauna of the area was a continual fascination! I added many new specimens to my collection and had ample time to read up on life cycles and habits of these amazing creatures. Loudly buzzing Scoliid wasps (Hymenoptera), curious tiny beetles with bright, metallic blue colouring (Coleoptera: Tenebrionidae) and comical spiny weevils (Coleoptera: Curculionidae) were among my favourites.

In late 1994 I was able to join a group of university students and travel to Hattah-Kulkyne National Park in the Mallee. My fascination with insects led to some interesting discoveries and much interest among the group, some of whom were science students. Some of the best finds at Hattah were a magnificent Bluebottle Fly (Diptera: Calliphoridae) and a Eucalypt Longicorn (*Phoracantha semipunctata*, Coleoptera: Cerambycidae).

More recently my fascination with insects has landed me a job. I'm sure it was my love of insects which helped me obtain my present position of Technical Officer with Agriculture Victoria, based in Kerang. As soon as it was made known that I knew a bit about insects I became the "expert". My fascination led me to include insect study as part of my work description and I am always pleased to have a gardener or farmer bring an insect in for identification. I have started preserving and mounting specimens that are brought in for me to have as a reference resource. I am also on the look out for insects that manage to survive and thrive in saline environments which are so often devoid of any other forms of animal life. I have recorded Tiger Beetles (*Megacephala australis*, Coleoptera: Carabidae) on bare salt pans and the magnificent Crested Grasshopper (*Alectoria superba*, Orthoptera: Tettigoniidae) feeding on roses in downtown Kerang.

DECEMBER GENERAL MEETING - MEMBERS NIGHT

Readers are reminded that the December General Meeting will be a "members night". Members are encouraged to bring exhibits, slides etc.

Please contact P. Carwardine or D. Dobrosak should you wish to make a very brief presentation, talk or exhibit etc. Council will co-ordinate the number of speakers/exhibitors to ensure a successful night will take place

QCC's APPEAL TO SAVE THE BUSH

The Queensland Conservation Council is urgently appealing for funds to assist their campaign to control and reduce broadscale tree clearing. Broadacre clearing is one of the most significant conservation issues in Queensland. Did you know that:

- ** The rate of clearing in Queensland is 4 times higher than in PNG?
- ** 68 per cent of Australia's tree-clearing occurs in Queensland?
- ** In 1994, tree-clearing permits covered over 1 million hectares?

QCC urgently needs to employ a campaign co-ordinator to work on the campaign to ensure the Government's draft tree-clearing guidelines are not watered down (as seems highly likely at present), to raise public understanding of the issues involved, to liaise with conservation groups state-wide - many other tasks.

If you can contribute to this critically important campaign, please send donations to:

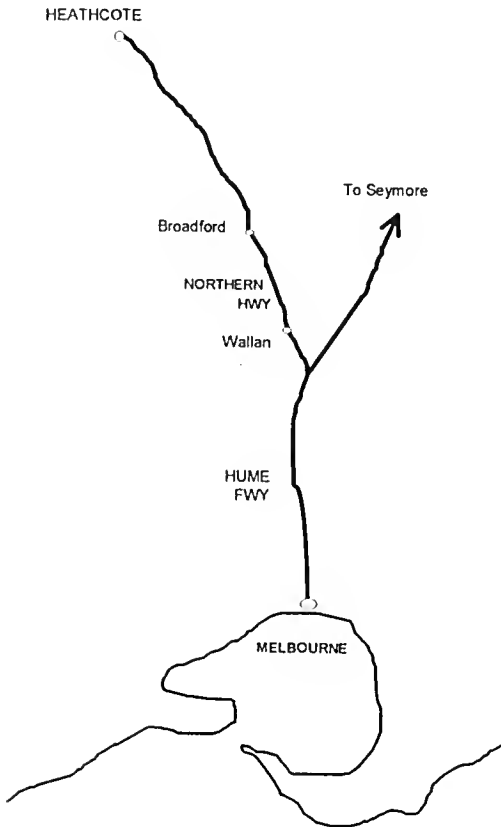
Queensland Conservation Council,
PO Box 12046, Elizabeth Street,
Brisbane 4002.

Donations to QCC are tax-deductible.

EXCURSION TO HEATHCOTE

An excursion will be held on Saturday 25th November 1995 to Heathcote.

Heathcote is 111km from Melbourne and can be reached via the Hume Freeway and Northern Highway. Members will be shown through the Insectorium by the Curator, Bert Candusio. A visit will then take place to the Pink Cliffs Fauna Reserve where members may collect insects. Lunch can be purchased at Heathcote and will be taken at the Reserve. A visit to a local earthworm and crayfish farm will take place following the visit to the Reserve. The Fee for the day will be \$8.50 per adult. Enquiries to: Peter Carwardine (03) 9571 8958.



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CONTRIBUTIONS TO THE *VICTORIAN ENTOMOLOGIST*

The Society welcomes contributions of articles, papers or notes pertaining to any aspect of entomology for publication in this Bulletin. Contributions are not restricted to members but are invited from all who have an interest. Material submitted should be responsible and original. Statements and opinions expressed are the responsibility of the respective authors and do not necessarily reflect the policies of the Society.

Contributions may be typed on A4 paper or *preferably* sent to the Hon. editor on an IBM formatted disk in *Microsoft Word for Windows*, *WordPerfect* or any recognised word processor software with an enclosed hard copy. Contributions may also be E-mailed to Internet address: Dobrosak@SECV telememo au. When E-mailing, indicate italicised or underlined text by including a suitable ASCII character (e.g. *) before and after the relevant text.

The deadline for each issue is the third Friday of each odd month.

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DIARY OF COMING EVENTS

20 October - General Meeting
Talk by David Stewart on "Invertebrate Colonisation of Re-established Bushland"
and
Talk by Dr. Michael Braby on:
"The thrills and Perils of Finding a new Species of Butterfly"

17 November - Council Meeting

Saturday 25 November - Excursion to Heathcote
(refer to page 100 for details)

8 December - Members Night
Members and Visitors to bring exhibits, slides etc. for discussion

Scientific names contained in this document are *not* intended for permanent scientific record, and are not published for the purposes of nomenclature within the meaning of the *International Code of Zoological Nomenclature*, Article 8(b). Contributions are not refereed, and authors alone are responsible for the views expressed.